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Multi-quasiparticle states and K-forbiddenness in ^{177}W

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Abstract

High-spin states in ^{177}W have been populated using the ^{164}Dy(^{18}O,5n) reaction at a beam energy of 83 MeV. Six new high-K bands based on 3-, 5- and 7-quasiparticle excitations have been observed. Nilsson configurations for these bands are discussed, and experimental and calculated g-factors are compared. Decays of the $K^\pi = \frac{29}{2}^+$ 5-quasiparticle state to the members of the $K^\pi = \frac{7}{2}^+$ band have been observed. The decay rates are compared with predictions calculated within a tunneling model where the nuclear shapes are considered to change along the γ direction in the (ϵ_2, γ) deformation plane. © 1997 Elsevier Science B.V.

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1. Introduction

In prolate deformed axially symmetric nuclei, the projection of the angular momentum on the symmetry axis, K is a constant of the motion. As a result, decays of high-K

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